Using Technology to Effect Change

Leading the Way

Should we be leading technology, or should technology be leading us?

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Using Technology to <u>Affect</u> Change

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From "Rogue Leader" to the U.S. Health Care System …

"Well, I guess technology is a good thing, if it lets you play the games you want to play."

Jonathan Reed

Age 10

The second best book on health care …

"Good to Great"
By Jim Collins

The actual study …

How do "great" organizations think differently about technology?

Interviews with leaders at "great" organizations …

- **80% did not even mention technology as one of the top five factors.**

- **Technology by itself was never a primary cause of either greatness or decline.**

- **However, many were leaders in applying new technology.**

As an organization …

- What do you care *passionately* about?
- At what can you be the *best in the world*?
- What drives your economic engine?

Does the new technology support this mission?

- No? – The "great" organizations refused to let technology lead them.

- Yes? – The "great" organizations became pioneers (fanatical and creative) in the application of that technology.

Core processes that support the Clinical Center's mission and vision …

- **Excellence in clinical research support**
- **Quality of patient care**
- **Cost effectiveness/efficiency**

Where does IS fit?

Some lessons learned …

An outsider's view from 20 years ago …

- **Fragmented**
- **No information system base**
- **Lack of insight**

Lack of insight …

<u>Decision Support</u> (n.) from the Latin, *who cares how you put the damn data in if you can't get anything out ?!?*

Coordinated Care Management

"…the goal is an uninterrupted journey through the bewildering array of doctors, nurses, other health professionals, laboratories, imaging units, hospital care, nursing home care and home health care that characterizes today's complex medical care."

Coddington, Moore, and Fischer

Integrated Health Care

The three elements of Coordinated Care Management

- Individual care pathways at the operating unit level
- Seamless transfers
- An "overall" management function

In 1997, KPMG performed a cost analysis among hospital systems considered to be leaders in the use of pathways. While a few of the hospitals reported decreases in ALOS and cost, the majority of them reported just the opposite.

Year 2000 – DRG 127: CHF

Samaritan Hospital

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
ALOS	5.1	5.4	4.7	4.4
Direct Cost/Case	$2,530	$2,181	$2,000	$2,019
Readmission	5%	16%	10%	17%

Pathway Compliance: 0-10%

Albany Memorial Hospital

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
ALOS	6.0	6.1	5.5	5.5
Direct Cost/Case	$2,428	$2,471	$2,431	$2,266
Readmission	8%	16%	10%	7%

Pathway Compliance: 40-75%

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Direct Cost Variation (CHF)

Physician	Cases	ALOS	Avg Direct Cost	% Direct Cost Above/ (Below)	Avg Indirect Cost	Avg Gain/ (Loss)
Doctor # 1	23	4.57	2,187	11.6%	1,700	(61)
Doctor # 2	11	3.27	1,471	-24.9%	1,111	1,244
Doctor # 3	5	2.00	1,167	-40.5%	875	1,784
Doctor # 4	4	6.00	2,260	15.3%	1,975	(409)
Doctor # 5	4	5.50	1,863	-4.9%	1,707	256
Doctor # 6	4	9.00	3,646	86.0%	3,258	(3,078)
Doctor # 7	4	3.00	1,365	-30.4%	1,092	1,369
Doctor # 8	4	2.75	1,269	-35.3%	987	1,570
Doctor # 9	3	5.33	1,742	-11.1%	1,676	408
Total	**138**		**1,960**			

Resource Consumption by Physician (CHF)

LAB-CHEMISTRY	Cases	Activity	Direct Cost	Avg Direct Cost Per Case
Doctor #1	15	46	355	24
Doctor #2	7	20	141	20
Doctor #3	4	19	147	37
Doctor #4	4	11	83	21
Doctor #5	3	16	125	42

DIAGNOSTIC IMAGING				
Doctor #1	23	42	758	33
Doctor #2	10	15	322	32
Doctor #3	5	8	115	23
Doctor #4	4	7	146	37
Doctor #5	4	11	224	56

ULTRASOUND				
Doctor #1	4	5	182	46
Doctor #2	2	2	73	37
Doctor #3	2	2	63	32
Doctor #4	1	1	49	49
Doctor #5	1	1	34	34

Day of Admission Analysis
DRG Code 209   MAJOR JOINT & LIMB REATTACHMENT
Princpal Proc 8151   TOTAL HIP REPLACEMENT

Admission Source	Cases	ALOS	Avg Direct Cost	% Above/ (Below) Avg
Physician Referral				
Mon	5	3.20	7,204	2.8%
Tue	2	6.00	8,898	27.0%
Wed	8	4.00	6,655	-5.0%
Thu	1	4.00	5,023	-28.3%
Total: Physician Referral	**16**	**4.00**	**7,005**	

Decision Support …

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"Quality" … the three buckets…

- **Safety**
- **Clinical Outcomes**
- **Patient Satisfaction**

Institute of Medicine

- "These stunningly high rates of medical errors - resulting in deaths (44,000-98,000 annually), permanent disability, and unnecessary suffering - are simply unacceptable in a medical system that promises first to 'do no harm.' Our recommendations are intended to encourage the health care system to take the actions necessary to improve safety."

  - William Richardson, Committee Chair

The Corporate perspective

Sigma	Defects per Million
1	690,000
2	308,000
3	66,800
(99% OK)	10,000
4	6,210
5	230
6	3

The Corporate Perspective

- **Airline deaths** ⇨

- **> 6 Sigma = .000043% = 0.43 deaths per million passenger boardings**

- **Airline baggage handling** ⇨

- **~ 4 Sigma = 0.6 % = ~ 6,000 bags per million**

- **ER missed diagnosis of Acute Myocardial Infarction*** ⇨

- **2 - 4 Sigma = 2% - 8% = 20,000 - 80,000 missed diagnoses per million AMIs**

* NEJM, Vol 342, No 16

Suzanne Delbanco
Executive Director of Leapfrog

- **CPOE reduces serious prescribing errors by more than 50%**

- **Volume thresholds reduce mortality by more than 30%**

- **Intensivists can reduce ICU deaths by more than 10%**

Computerized Physician Order Entry

- Error reduction
- Pathway compliance
- Medication alternatives
- Duplicate testing

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The final challenge …

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